

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application
1-21 (CANCELLED)

22. (New) A liquid metering device comprising:

a conduit adapted to permit liquid to flow through the conduit, a portion of the conduit having a wall through which light may pass;

a liquid heater adapted to heat a portion of the liquid at a first position along the conduit;

a light source adapted to generate at least one beam;

a beam splitter adapted to split the at least one beam into a first beam directed along a first path through the wall at a second position along the conduit and a second beam directed along a second path around the conduit;

a device adapted to combine the first and second beams after the first beam has passed through the conduit such that the first and second beams undergo a degree of interference;
and

an optical detector adapted to detect an intensity variation of the combined first and second beams caused by a heated portion of the liquid passing through the first beam.

23. (New) The liquid metering system of claim 22 further comprising an optical phase delay element in the first path or the second path.

24. (New) The liquid metering system of claim 23, wherein the optical phase delay element is separate from the conduit.

25. (New) The liquid metering system of claim 22 wherein the wall is a glass wall or a polymer wall.

26. (New) The liquid metering system of claim 22 wherein the portion of the conduit has a lumen with a rectangular or square cross section.

27. (New) The liquid metering system of claim 22 wherein the liquid heater is an infrared laser.

28. (New) The liquid metering system of claim 22 wherein the light source emits visible light.

29. (New) The liquid metering system of claim 22 wherein the light source is coherent.

30. (New) The device of claim 22, further comprising:
a processor adapted to determine the speed at which the liquid is passing through the conduit based on the time between the point at which fluid begins to flow through the conduit and the time that the optical detector detects an intensity variation of the combined first and second beams.

31. (New) The device of claim 22, further comprising:
a processor adapted to determine the speed at which the liquid is passing through the conduit based on the time between the point at which the fluid is heated while moving through the conduit and the time that the optical detector detects an intensity variation of the combined first and second beams.

32. (New) The device of claim 22, wherein the detector detects a change in the degree of interference caused by the heated portion of the liquid passing through the first beam.

33. (New) A method of metering a liquid comprising the steps of:
heating a portion of the liquid at a first position along a conduit wherein the conduit has a wall at a second position downstream from the first position;
directing a first beam of light along a first path through the wall and the liquid;
directing a second beam of light along a second path around the conduit;

recombining the first and second beams after the first beam has passed through the liquid such that the first and second beams undergo a degree of interference; and
detecting a change in the intensity of the recombined first and second beams caused by the heated portion of the liquid passing through the first beam of light.

34. (New) The method of claim 33 wherein the wall is a glass wall or a polymer wall.

35. (New) The method of claim 33 wherein the conduit has a lumen with a rectangular or square cross section.

36. (New) The method of claim 33 wherein the first and second beams are visible light beams.

37. (New) The method of claim 33 wherein the heating step comprises the step of directing an infrared laser beam to the liquid.

38. (New) The method of claim 33, wherein an optical phase delay element is located in the first path or the second path.

39. (New) The method of claim 33 wherein the source of the first and second beams is a coherent light source.

40. (New) The method of claim 38, wherein the optical phase delay element is separate from the conduit.

41. (New) The method of claim 33, further comprising detecting a change in the degree of interference caused by the heated portion of the liquid passing through the first beam of light.

42. (New) The method of claim 33, further comprising:

automatically determining the speed at which the liquid is passing through the conduit based on the time between the point at which fluid begins to flow through the conduit and the time that the optical detector detects an intensity variation of the combined first and second beams.

43. (New) The method of claim 33, further comprising:

automatically determining the speed at which the liquid is passing through the conduit based on the time between the point at which the fluid is heated while moving through the conduit and the time that the optical detector detects an intensity variation of the combined first and second beams.